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Original Article

Herramientas digitales en la enseñanza de lenguas extranjeras: oportunidades y desafíos

Digital tools in foreign language teaching: opportunities and challenges

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Resumen

El propósito del artículo propuesto fue analizar el impacto del uso sistemático de herramientas digitales en los resultados del aprendizaje de una lengua extranjera. El estudio se realizó con un diseño cuasiexperimental, utilizando pretest y postest para los grupos control y experimental. Participaron 200 estudiantes que cursaban una lengua extranjera como parte de un curso obligatorio. Se utilizaron estadísticas descriptivas, análisis de correlación, ANCOVA y regresión lineal múltiple para analizar los datos. Los resultados del estudio mostraron un impacto positivo de las herramientas digitales en el nivel de preparación de los estudiantes en lenguas extranjeras tras controlar el nivel inicial de conocimientos. Se encontró que la intensidad del uso de herramientas digitales y el nivel de autorregulación del aprendizaje se convirtieron en factores clave para el aumento de los resultados de aprendizaje. La motivación desempeñó un papel de apoyo. Los resultados obtenidos mostraron que la eficacia de las herramientas digitales estuvo determinada por el diseño pedagógico del aprendizaje y la interacción activa de los estudiantes con el entorno digital. Las conclusiones enfatizan la justificación de la viabilidad del uso sistemático y metódicamente equilibrado de las herramientas digitales en la enseñanza de lenguas extranjeras.

Palabras clave: autorregulación del aprendizaje, cuasi-experimento, enseñanza de lenguas extranjeras, herramientas digitales, resultados del aprendizaje.

Abstract

The purpose of the proposed article was to analyze the impact of the systematic use of digital tools on the results of learning a foreign language. The study was conducted in a quasi-experimental design using pretest–posttest for the control and experimental groups. 200 students who studied a foreign language as part of a mandatory course participated in the experiment. Descriptive statistics, correlation analysis, ANCOVA, and multiple linear regression were used to analyze the data. The results of the study showed a positive impact of digital tools on the level of foreign language preparation of students after controlling for the initial level of knowledge. It was found that the intensity of use of digital tools and the level of self-regulation of learning became key factors for increasing learning outcomes. Motivation played a supporting role. The results obtained showed that the effectiveness of digital tools was determined by the pedagogical design of learning and the active interaction of students with the digital environment. The conclusions emphasize the justification of the feasibility of the systematic and methodically balanced use of digital tools in teaching foreign languages.

Keywords: digital tools, foreign language teaching, learning outcomes, quasi-experiment, self-regulation of learning.

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Introduction

The rapid digitalization of education, which has significantly accelerated due to the COVID-19 pandemic, Russian aggression against Ukraine, and global changes in labor markets, has caused fundamental changes in the teaching of foreign languages. The latest digital tools (such as online platforms, learning management systems, mobile applications, artificial intelligence (AI), virtual and augmented reality) have been successfully integrated into the educational process. Thanks to their use, new models of interaction between teachers, students, and educational content have been formed. For the understanding of modern education, such technologies have opened up significant opportunities for personalizing learning, developing student autonomy, authentic language practice, and building intercultural competence.

Modern researchers have shown that digital tools usually have a positive impact on the formation of motivation in higher education students, the formation of better speech activity, and the development of the necessary reading, writing, listening, and speaking skills (Torres Martín et al., 2021; Zou et al., 2020). Digital capabilities are also relevant for the development of academic mobility and readiness for lifelong learning (Kern et al., 2022). At the same time, the empirical results obtained were quite heterogeneous. In particular, along with the declared advantages, problems were recorded (Kulichenko et al., 2018; Okoye et al., 2022). For example, a significant challenge was the superficial use of technologies, overload with digital resources, the growth of cognitive fatigue, unequal access to digital infrastructure, etc (Graeske & Sjöberg, 2021). Finally, the lack of methodological recommendations (since digital technologies developed extremely dynamically) also made itself felt. In the context of the crisis of digital transformation, the ability of learners to self-regulate has become particularly important. The transition to autonomous and technologically mediated forms of learning required learners to independently manage their learning activities, including planning, monitoring, and evaluating their own results. It is self-regulation that has made it possible to reduce the negative effects of cognitive overload, support motivation, and ensure effective learning in a digital environment.

Despite the significant increase in the number of scientific publications, modern researchers focused on the description of individual digital tools, a certain generalization of positive practices (Hossain, 2024). However, the lack of a systematic analysis of pedagogical, organizational and psychological-didactic limitations of the use of modern technologies was a research gap. Despite the significant increase in the number of scientific publications, modern research has mainly focused on the issues of individual digital tools or the generalization of positive practices in their use. Such fragmentation did not allow for the full consideration of the interaction of pedagogical, organizational and psychological factors that determined the effectiveness of digital learning. In this context, a systemic approach was more productive, as it allowed considering digital tools as elements of a holistic didactic system where technologies, participants in the educational process and educational content interact.

The purpose of the proposed article was a comprehensive analysis of the opportunities and problems of using digital tools in teaching foreign languages in higher education institutions. The study was aimed at identifying the pedagogical potential of digital technologies, finding key barriers that did not allow for the effective integration of such opportunities into the educational process.

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The scientific novelty of the article consisted in the systematization of digital tools taking into account their didactic functions, as well as in the identification of problem areas that affect the quality of foreign language learning in the university environment.

Literature Review

In recent years, digital tools have become an important component of foreign language teaching in higher education institutions, especially in distance and blended learning environments. In the scientific literature, digital tools are usually understood to include the use of online platforms, mobile applications, video communication services, digital resources for students' independent work, as well as online assessment and feedback tools. Researchers emphasize that the integration of such tools changes the organization of the educational process, the forms of interaction between the teacher and students, and the nature of work with educational material (Alexander et al., 2023; Castañeda-Trujillo & Jaime Osorio, 2021).

In most modern studies, scientists have emphasized the positive impact of digital tools on language teaching (Crompton et al., 2024). Such tools have significantly expanded access to authentic language resources, contributed to the formation of regular language practice, and made it possible to study outside the classroom (Boichenko et al., 2023). Special attention was paid to mobile applications that supported the development of vocabulary, grammar and reading skills in a format convenient for students (Karataş et al., 2024). The researchers also noted that digital tools were able to increase the motivation and engagement of students (Kukulska-Hulme, 2021). This was especially true when these tools were combined with the use of gamification elements and self-monitoring of learning progress.

The researchers also concluded that the positive effect of digital tools was not automatic. Many studies emphasized the fact that the mere fact of using technology did not guarantee an increase in the quality of foreign language learning (Law, 2024; Aliyeva et al., 2023). Often, digital tools were used fragmentarily or only performed an auxiliary function, that is, they were not integrated into a holistic methodological system (Turchyn et al., 2023). In such circumstances, they could not change the pedagogical logic of learning, but recreated traditional approaches in electronic format.

Such problems are particularly evident in research conducted in Mexico, Spanish-speaking Latin American countries, and the Philippines (Ancheta, 2025; Castaño-Roldán & Correa, 2021). In these contexts, the effectiveness of using tsifr tools is significantly limited by a combination of structural and pedagogical factors. First, limited access to stable internet connections and digital devices has created quite unequal learning conditions and limited students' participation in online activities. Second, insufficient training of teachers in digital pedagogy has led to superficial use of technologies without integrating them into a holistic didactic design. Third, insufficient institutional support has led to the lack of agreed standards for the implementation of digital learning. As a result, digital tools have often reproduced traditional learning models in an electronic format, without providing qualitative pedagogical changes. This demonstrated the dependence of the effectiveness of digitalization on both the availability of technologies and the broader educational environment in which they were applied. These studies concluded that foreign language teaching was based on a rapid adaptation to online formats (Dooly, 2023). The main challenges were the organization of speech interaction, the control of learning activities and the support of student motivation.

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In addition to technical and organizational barriers, researchers also analyzed the problems of overloading students with digital resources (Godwin-Jones, 2021; González & Ferreiro, 2024). In particular, an excessive number of platforms, tasks and online activities could lead to fatigue, decreased concentration and superficial assimilation of the material. This was especially relevant for the development of productive language skills (speaking and writing), which required high-quality feedback and thoughtful pedagogical support.

The analysis of the scientific literature also showed that most researchers focused on describing the experience of using digital tools or on studying the attitudes of students and teachers towards technology (Bohomaz et al., 2023; Slamet, 2024). In contrast, significantly fewer works were devoted to the real impact of digital tools on learning outcomes or combined quantitative and qualitative data. In addition, in many publications the concept of “digital tools” is used quite generally, without a clear distinction between their didactic functions (Rintaningrum, 2023; Selfa-Sastre et al., 2022).

Therefore, despite a significant number of studies, a number of gaps in previous research have been identified. The conditions under which digital tools really contribute to the development of foreign language competence have not been sufficiently studied, the role of pedagogical design, digital competence of teachers and institutional support has been established. This has led to the need for further research aimed at a comprehensive analysis of the opportunities and problems of using digital tools in teaching foreign languages.

Methodology

Design and general logic

The study was conducted in a quasi-experimental format using a pretest–posttest design in the control and experimental groups. The aim was to assess the impact of the targeted use of digital tools on the results of foreign language learning and related psychological and pedagogical indicators (engagement, motivation, self-regulation).

Participants

The study involved 200 students studying a foreign language as part of a compulsory education course. All participants had approximately the same initial level of foreign language proficiency, which was checked using an entrance language test (pretest) before the start of the experiment. The sample was formed according to the cluster principle based on established academic groups, which determined the quasi-experimental nature of the study. According to the organization of the educational process, the students were divided into an experimental (EG, n = 100) and a control group (CG, n = 100). This division provided grounds for further correlation and regression analyses.

Therefore, the sample included students who regularly attended classes and participated in all stages of the study. Indicators of participants with incomplete data or with a low level of involvement (attendance of less than 75% of classes) were excluded from the final analysis. All participants provided informed consent to participate in the study. Accordingly, data collection and processing were carried out in compliance with the ethical principles of anonymity and confidentiality. All participants had the right to refuse to participate in the experiments at any time. To

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reduce the influence of possible extraneous factors, the previous level of educational training, as well as the basic educational characteristics of the participants, were taken into account in the statistical analysis. In order to ensure group equivalence, a preliminary analysis of the pretest results was conducted, which revealed no statistically significant differences between the experimental and control groups. This made it possible to correctly compare the results of the experimental and control groups, increasing the internal validity of the study.

Educational intervention (digital tools)

The intervention lasted 10 weeks and was integrated into the standard curriculum without increasing the classroom load. In the experimental group, the training focused on the use of a “digital package”, which combined the use of LMS platforms (posting materials, deadlines, assessment rubrics, organizing independent work), mobile/web tools for vocabulary and repetition (spaced practice), formative assessment services (short online tests, instant feedback), tools for oral/written production (short mini-answers, peer feedback, finalizing drafts). In the control group, the mastery of similar educational material took place with the same amount of hours, using educational and methodological materials. However, the work took place primarily in the traditional model (auditorium exercises and basic homework), without the systematic and mandatory use of a digital package.

Measurement tools and procedure

Data collection was carried out twice: before the intervention (pretest) and after completion (posttest). First of all, to determine the learning outcomes in a foreign language (the main outcome), a standardized or unified test (with parallel forms) was used - to determine the key components of foreign language competence. The main indicator was the increase in the result (posttest - pretest) or the posttest score with the pretest control in the statistical model.

A standardized test, modeled after international TOEFL/IELTS exams and adapted for the study, was used to determine the level of foreign language proficiency. The test consisted of reading, writing, listening, and speaking tasks and was validated by a group of experts in the field of foreign language teaching.

Psychological and pedagogical variables (secondary outcomes) were then used. As a result, learning motivation, involvement, and self-regulation of learning were assessed using short validated scales (Likert format). The reliability of the scales was checked by Cronbach's α coefficients. Digital tool usage indicators (EG only) were measured by recording log data (frequency of entries, tasks completed, number of test attempts, volume of activities), which were then used as quantitative predictors in correlation and regression analyses.

At the first stage, all participants filled out an informed consent and took a pretest (language test and questionnaires). Then, for 10 weeks, the intervention was applied: EG worked with a digital package, CG – in a standard format. At the final stage, all participants took a posttest using a similar procedure (See Table 1).

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Table 1.
Comparison of learning activities in experimental and control groups

Component	Experimental group (EG)	Control group (CG)
Learning materials	LMS-based digital content, structured modules	Printed/manual materials
Vocabulary practice	Mobile/web tools (spaced repetition)	Traditional exercises (textbook)
Assessment	Online quizzes with instant feedback	Written tests with delayed feedback
Speaking/writing	Digital tools, peer feedback, mini-tasks	Classroom-based activities
Feedback	Continuous, automated + peer	Teacher-based, periodic
Learning format	Blended/digital-supported	Traditional face-to-face

Data analysis

The analysis took place in several consecutive steps. First, descriptive statistics (M, SD) were calculated and the internal consistency of the scales (α) was checked. To assess the effect of the intervention, ANCOVA was used, where the posttest result (or gain) was compared between EG and CG with control for pretest and additional covariates (if necessary).

To explain the mechanisms of influence, a correlation analysis between log data, motivation/engagement/self-regulation and performance gains was used. Then, multiple linear regression (hierarchical approach) was applied. In particular, the pretest and baseline characteristics were sequentially entered into the model, followed by group membership (EG/CG), and then the intensity of digital tool use and psychological and pedagogical variables. Statistical significance was assessed at $p < 0.05$ (it was additionally interpreted as effect sizes and confidence intervals).

Results and Discussion

Results

At the initial stage, descriptive statistics of the main variables were analyzed. The mean values of the input language test (pretest) in the experimental and control groups did not demonstrate significant statistical differences ($p > 0.05$). Such circumstances indicated a completely comparable initial level of foreign language training of the participants. Also, the internal consistency check of the psychological and pedagogical scales showed a completely acceptable level of reliability. In particular, the Cronbach's α indicators for the motivation, involvement and self-regulation scales were within 0.78–0.86. Such indicators fully corresponded to the recommendations for conducting educational research.

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Table 2.
Descriptive statistics of main study variables

Variable	Group	N	Mean (M)	SD
Language proficiency (Pre-test)	EG	100	58.42	8.61
	CG	100	57.96	8.47
Language proficiency (Post-test)	EG	100	71.85	7.94
	CG	100	66.12	8.21
Gain score (Post–Pre)	EG	100	13.43	5.62
	CG	100	8.16	5.44
Motivation	EG	100	3.89	0.61
	CG	100	3.52	0.65
Learning engagement	EG	100	3.95	0.58
	CG	100	3.47	0.63
Self-regulated learning	EG	100	3.82	0.59
	CG	100	3.41	0.62
Digital tool usage index	EG	100	4.21	0.73
	CG	100	2.14	0.69

Note. Language proficiency scores are reported on a 0–100 scale. Motivation, engagement, self-regulated learning, and digital tool usage were measured on a 5-point Likert scale (1 = low, 5 = high).

To assess the effect of using digital tools, an ANCOVA was conducted, where the dependent variable was the posttest result in a foreign language, and the covariate was the pretest (See Table 3).

Therefore, the results of the analysis demonstrated the existence of a statistically significant effect for the experimental group on educational outcomes after controlling for the initial level:
$F(1, 197) = 18.42$, $p < 0.001$, partial $\eta^2 = 0.09$.

Table 3.
ANCOVA and hierarchical regression predicting language learning outcomes

Source	df	F	p	Partial η²
Pre-test (covariate)	1	52.17	< .001	.21
Group (EG vs CG)	1	18.42	< .001	.09
Error	197			

Note. Dependent variable: post-test language proficiency score.

The adjusted mean values demonstrated that students in the experimental group had higher educational outcomes than participants in the control group. This indicated a positive impact of the systematic use of digital tools on the level of foreign language training.

The next stage was to perform an analysis of the relationships between the intensive use of digital tools, psychological and pedagogical indicators and the increase in language outcomes (in the experimental group).

Such a correlation analysis (Pearson) made it possible to identify several important phenomena. First of all, a moderate positive relationship was characterized between the intensity and use of digital tools, the increase in language outcomes ($r = 0.41$, $p < 0.001$). Another result was a significant relationship between self-regulation of learning and the increase in results ($r = .46$, $p < 0.001$). Positive correlations were found between student engagement and indicators of activity in the digital environment ($r = 0.38$, $p < 0.01$).

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Therefore, the data obtained showed that the fact of using digital tools in combination with the nature and regularity of interaction with them played an important role in achieving learning outcomes.

To identify the factors that most predicted the increase in foreign language competence, a hierarchical multiple regression analysis was carried out. Model 1 consisted of including not only the pretest, explaining 21% of the variance in the results ($R^2 = 0.21$). At the same time, Model 2 with the addition of the variable of group affiliation (EG/CG) demonstrated a statistically significant increase in the explained variance ($\Delta R^2 = 0.07$, $p < 0.01$). Model 3, which additionally included the intensity of use of digital tools, motivation and self-regulation, explained up to 39% of the total variance in the increase in language results ($R^2 = 0.39$).

In the final model, the following factors were significant predictors: self-regulation of learning ($\beta = 0.32$, $p < 0.001$), intensity of use of digital tools ($\beta = 0.27$, $p < 0.01$) and belonging to the experimental group ($\beta = 0.21$, $p < 0.05$) (See Table 4).

Table 4.
Hierarchical multiple regression predicting gain score

Predictor	β	t	p
Model 1			
Pre-test proficiency	−.46	−7.82	< .001
R^2 = .21			
Model 2			
Pre-test proficiency	−.39	−6.41	< .001
Group (EG = 1, CG = 0)	.27	4.36	< .001
ΔR^2 = .07			
Model 3			
Pre-test proficiency	−.31	−5.12	< .001
Group (EG = 1, CG = 0)	.21	3.18	.002
Digital tool usage	.27	3.94	< .001
Self-regulated learning	.32	4.71	< .001
Motivation	.14	1.98	.049
R^2 = .39			

Motivation demonstrated a positive, but less pronounced predictive power after the inclusion of other variables in the model. The results confirmed that the use of digital tools in teaching foreign languages had a statistically significant and pedagogically relevant effect. However, this effect was not uniform for all participants. The greatest learning achievements were observed in students with the highest level of self-regulation, more active interaction with digital learning environments. Therefore, the results in general showed that the effectiveness of digital tools was determined not only by their availability, but also by the pedagogical design of learning and the individual characteristics of students.

Discussion

The aim of this study was to analyze the impact of the systematic use of digital tools on the results of foreign language learning, as well as to identify factors that mediated or enhanced this impact. The results obtained indicated that the integration of digital tools into the educational process could have a positive effect on the level of foreign language preparation of education seekers. However, such an effect was not uniform and depended on several pedagogical and individual factors.

First, the results obtained indicated that the systematic use of digital tools contributed to increasing the level of foreign language training of education seekers.

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This was fully consistent with the previous conclusions of modern researchers, who emphasized that digital tools could increase the effectiveness of foreign language learning, if they were purposefully and methodically justified in their integration (Cordeiro, 2022). It is important that within the framework of the proposed study, digital tools were not used in isolation (García Botero et al., 2022). They were integrated into the logic of the course as a means of supporting practice, feedback, and independent work.

Importantly, the intensity of interaction with digital tools played a key role in achieving learning outcomes. This indicated the presence of the so-called “dose–response effect”. That is, the fact of using technologies and regular interaction with the digital environment had an important (if not decisive) significance for the success of students’ learning. This result supported the position of the researchers, who emphasized that digital tools played the role of a catalyst in learning (Kasneci et al., 2023; Müller-Hartmann & Hauck, 2022). However, this situation developed only when these capabilities were involved in systematic activities and were used not only in episodic or formal tasks.

Also, regression analysis showed that self-regulation of learning became one of the strongest signs of the increase in foreign language competence. This made it possible to interpret digital tools not as a self-sufficient factor of success, but as an environment in which the already existing or formed skills of planning, control and reflection of educational activities are strengthened. Thus, the results supported the approach in the scientific literature (Gagić et al., 2023), according to which the effectiveness of digital technologies depended mostly on the promotion of the development of autonomy and responsibility among learners (Panagiotidis et al., 2023; Puebla et al., 2021).

The results obtained made it possible to identify some heterogeneity in previous findings recorded in older studies. The literature often outlined contradictory data on the impact of digital tools on educational achievements (Alves et al., 2019; Boreland et al., 2023). This was partly due to differences in pedagogical design and the level of support for learners (Bećirović et al., 2021). The results obtained in this study showed that digital tools were effective when they were combined with a clear task structure, regular formative assessment and opportunities for reflection. At the same time, the tools were not used only as a technical addition to traditional learning.

The proposed results also indicated that motivation was related to educational outcomes. However, this type of motivation became a weaker predictor in the final regression model, especially when combined with self-regulation and actual use of digital tools. This could indicate that motivation alone did not guarantee better results without appropriate learning strategies and active participation in the educational process. This conclusion significantly supplemented the current discussions on the need to move from motivation-oriented approaches to models that focused on learning strategies and behavioral indicators (Masterson, 2020; Pilege et al., 2021).

In general, it is worth noting that the proposed research results confirmed the idea of digital tools as a factor in significantly increasing the effectiveness of foreign language teaching. However, such an impact is possible only if they are used pedagogically appropriate (Lenkaitis & Loranc-Paszylk, 2019; Lira-Gonzales & Grégoire, 2021). Therefore, the practical contribution of the study was to demonstrate that the increase in learning outcomes is not so much due to access to digital resources, but rather due to the interaction between the intensity of their use, the individual characteristics of students and the general organization of the educational process. Such results highlighted the need for a comprehensive

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approach to the digitalization of foreign language education, which was focused on the technology itself and the quality of the learning experience.

Further interpretation of the results will require consideration of the limitations of the methodology used. First, the use of a quasi-experimental design with clustering significantly limited the possibility of complete randomization, which could have affected internal validity. Although the use of a pretest and ANCOVA allowed us to control for initial differences between groups, the results could have been influenced by uncontrolled individual and contextual factors. There was also a need to take into account a significant part of the psychological and pedagogical variables (motivation, engagement, self-regulation), which were measured using self-assessment questionnaires. Although the scales used demonstrated adequate reliability, such data could be sensitive to socially desirable responses. At the same time, the use of self-report questionnaires created the risk of social desirability effects. In particular, participants may have overestimated their own motivation, engagement, or self-regulation, considering such responses more desirable. This could partly explain the relatively high mean values of psychological indicators and influence the strength of the identified relationships. In addition, the subjective nature of such data limited the ability to accurately measure actual learning behavior. In subsequent studies, self-reports were combined with objective indicators (e.g., behavioral logs or observations), which allowed to increase the validity of the obtained results.

Conclusions

The proposed study analyzed the systematic application of digital tools on the results of learning a foreign language. As a result of a quasi-experiment with the participation of 200 students, it was determined that the purposeful integration of digital tools into the educational process had a significant impact on the development of foreign language competence (when compared to the traditional learning model).

The data obtained demonstrated that the effectiveness of digital tools depends not only on their use. First of all, another aspect is the intensity and quality of interaction with the digital learning environment, as well as the individual characteristics of students. In particular, self-regulation of learning and active participation in digital activities became important prerequisites for achieving academic success. At the same time, motivation became an auxiliary factor that did not play a decisive role.

In the practical sphere, the results of the study had important implications for teachers and developers of educational programs. In particular, it has been proven that digital tools should be implemented as part of a holistic pedagogical scenario with clearly defined learning objectives and formative feedback. Equally important, attention should be paid to the development of learners' self-regulation skills, including planning, reflection and responsibility for their own learning.

Prospects for further research were related to a more detailed analysis of the impact of new digital technologies on the process of learning foreign languages. In particular, the study of the potential of generative artificial intelligence as a tool for personalized learning, automated feedback, and the development of productive speaking skills will be relevant. In addition, a separate direction may be the study of the use of virtual and augmented reality technologies to create an authentic language environment and develop communicative competence.

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Bibliographic references

Alexander, K., Savvidou, C., & Alexander, C. (2023). Who wrote this essay? Detecting ai-generated writing in second language education in higher education. *The Journal of Teaching English with Technology*, *2023*(2). https://doi.org/10.56297/buka4060/xhld5365

Aliyeva, G. B., Honcharuk, V., Pavliuk, N., Zinchenko, V., & Sivachenko, I. (2023). Review of modern pedagogical technologies and methods in the field of philology according to European standards: A literature review. *Revista on line de Política e Gestão Educacional*, *27*(esp.2), e023049. https://doi.org/10.22633/rpge.v27iesp.2.18778

Alves, P., Miranda, L., & Morais, C. (2019). The Importance of Virtual Learning Environments in Higher Education. In *Computer-Assisted Language Learning* (pp. 109–131). IGI Global. https://doi.org/10.4018/978-1-5225-7663-1.ch005

Ancheta, J. R. (2025). Computer-Mediated Communication in Language Teaching: Challenges and Responses of Filipino ESL Teachers in the Philippines. *Jurnal Komunikasi: Malaysian Journal of Communication*, *41*(1), 351–367. https://doi.org/10.17576/jkmjc-2025-4101-20

Bećirović, S., Brdarević-Čeljo, A., & Delić, H. (2021). The use of digital technology in foreign language learning. *SN Social Sciences*, *1*(10). https://doi.org/10.1007/s43545-021-00254-y

Bohomaz, O., Koreneva, I., Lihus, V., Kambalova, Y., Shevchuk, V., & Tolchieva, H. (2023). Regarding the development of educational and scientific potential in the 21st century: Technological challenges. *Conhecimento & Diversidade*, *15*(38), 479–495. https://doi.org/10.18316/rcd.v15i38.11100

Boichenko, M., Churychkanych, I., Kulichenko, A., Shramko, R., & Rakhno, M. (2023). Mind maps to boost the learning of English as L2 at higher education institutions in Ukraine. *Amazonia Investiga*, *12*(70), 229–240. https://doi.org/10.34069/AI/2023.70.10.21

Boreland, T., Lotherington, H., Tomin, B., & Thumlert, K. (2023). The use of digital tools in French as a Second Language teacher education in Ontario. *TESL Canada Journal*, *39*(2). https://doi.org/10.18806/tesl.v39.i2/1375

Castañeda-Trujillo, J. E., & Jaime Osorio, M. F. (2021). Pedagogical Strategies Used by English Teacher Educators to Overcome the Challenges Posed by Emergency Remote Teaching During the COVID-19 Pandemic. *Íkala*, *26*(3), 697–713. https://doi.org/10.17533/udea.ikala/v26n3a12

Castaño-Roldán, J. D., & Correa, D. (2021). Critical Reading With Undergraduate EFL Students in Colombia: Gains and Challenges. *Profile: Issues in Teachers' Professional Development,* *23*(2), 35–50. https://doi.org/10.15446/profile.v23n2.89034

Cordeiro, J. (2022). Emergency Remote Teaching and Learning. In *Impact of Digital Transformation in Teacher Training Models* (pp. 140–159). IGI Global. https://doi.org/10.4018/978-1-7998-9538-1.ch008

Crompton, H., Edmett, A., Ichaporia, N., & Burke, D. (2024). AI and English language teaching: Affordances and challenges. *British Journal of Educational Technology, 55*(6), 2503-2529. https://doi.org/10.1111/bjet.13460

Dooly, M. (2023). Language Teaching, Language Learning, and Virtual Exchange in an Age of Complexity. *International Journal of Computer-Assisted Language Learning and Teaching*, *12*(3), 1–18. https://doi.org/10.4018/ijcallt.316459

Gagić, A., Gajić, T., Gavranović, V., Maenza, N., & Veljković Michos, M. (2023). Digital Tools for Language Learning: Exploring Teachers' Innovative and Engaging Practices. In *Sinteza 2023 – International Scientific Conference on Information Technology and Data Related Research*. Belgrade, Serbia: Singidunum University. https://doi.org/10.15308/sinteza-2023-281-287

https://revistaeduweb.org/
ISSN: 1856-7576
Open Acces

García Botero, G., Nguyet, D. A., García Botero, J., Zhu, C., & Questier, F. (2022). Acceptance and Use of Mobile-Assisted Language Learning by Higher Education Language Teachers. *Lenguaje, 50*(1), 66–92. https://doi.org/10.25100/lenguaje.v50i1.11006

Godwin-Jones, R. (2021). Big data and language learning: Opportunities and challenges. *Language Learning & Technology, 25*(1), 4–19. https://doi.org/10.64152/10125/44747

González, M. d. L. Á. G., & Ferreiro, A. L. (2024). Web-assisted instruction for teaching and learning EFL phonetics to Spanish learners: Effectiveness, perceptions and challenges. *Computers and Education Open*, *7*, 100214. https://doi.org/10.1016/j.caeo.2024.100214

Graeske, C., & Sjöberg, S. A. (2021). VR-Technology in Teaching: Opportunities and Challenges. *International Education Studies*, *14*(8), 76. https://doi.org/10.5539/ies.v14n8p76

Hossain, K. I. (2024). Reviewing the role of culture in English language learning: Challenges and opportunities for educators. *Social Sciences & Humanities Open*, *9*, 100781. https://doi.org/10.1016/j.ssaho.2023.100781

Karataş, F., Abedi, F. Y., Ozek Gunyel, F., Karadeniz, D., & Kuzgun, Y. (2024). Incorporating AI in foreign language education: An investigation into ChatGPT's effect on foreign language learners. *Education and Information Technologies, 29, 19343–19366*. https://doi.org/10.1007/s10639-024-12574-6

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., . . . & Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, *103*, 102274. https://doi.org/10.1016/j.lindif.2023.102274

Kern, R., Liddicoat, A. J., & Zarate, G. (2022). Research perspectives on virtual intercultural exchange in language education. In *Virtual Exchange for Intercultural Language Learning and Teaching* (pp. 1–20). New York, NY, USA: Routledge. https://doi.org/10.4324/9781003024620-1

Kukulska-Hulme, A. (2021). Reflections on research questions in mobile assisted language learning. *Journal of China Computer-Assisted Language Learning*, *1*(1), 28–46. https://doi.org/10.1515/jccall-2021-2002

Kulichenko, A. K., Sotnik, T. V., & Stadnychenko, K. V. (2018). Electronic portfolio as a technique of developing creativity of a foreign language teacher. *Information Technologies and Learning Tools*, *66*(4), 286–304. https://doi.org/10.33407/itlt.v66i4.2178

Law, L. (2024). Application of Generative Artificial Intelligence (GenAI) in Language Teaching and Learning: A Scoping Literature Review. *Computers and Education Open*, 6, 100174. https://doi.org/10.1016/j.caeo.2024.100174

Lenkaitis, C. A., & Loranc-Paszylk, B. (2019). Facilitating global citizenship development in lingua franca virtual exchanges. *Language Teaching Research*, *25*(5), 136216881987737. https://doi.org/10.1177/1362168819877371

Lira-Gonzales, M.-L., & Grégoire, P. (2021). Technologies in second-language classes. In *Foreign Language Learning in the Digital Age* (pp. 189–206). New York, NY, USA: Routledge. https://doi.org/10.4324/9781003032083-16

Masterson, M. (2020). An Exploration of the Potential Role of Digital Technologies for Promoting Learning in Foreign Language Classrooms: Lessons for a Pandemic. *International Journal of Emerging Technologies in Learning (iJET)*, *15*(14), 83. https://doi.org/10.3991/ijet.v15i14.13297

Müller-Hartmann, A., & Hauck, M. (2022). Chapter 7. Fostering (Critical) digital teaching competence through virtual exchange. In *Language Learning &*

https://revistaeduweb.org/
ISSN: 1856-7576
Open Acces

Language Teaching (pp. 135–156). John Benjamins Publishing Company. https://doi.org/10.1075/lllt.57.07mul

Okoye, K., Hussein, H., Arrona-Palacios, A., Quintero, H. N., Ortega, L. O. P., Sanchez, A. L., Ortiz, E. A., Escamilla, J., & Hosseini, S. (2022). Impact of digital technologies upon teaching and learning in higher education in Latin America: an outlook on the reach, barriers, and bottlenecks. *Education and Information Technologies, 28, 2291–2360*. https://doi.org/10.1007/s10639-022-11214-1

Panagiotidis, P., Krystalli, P., & Arvanitis, P. (2023). Technology as a Motivational Factor in Foreign Language Learning. *European Journal of Education*, *6*(1), 69–84. https://eric.ed.gov/?id=EJ1417303

Pilege, E., Plota, S., Pilegis, G., & Zivitere, M. (2021). ACT Digital: The Strategic Role of Analytics, Creativity and Technologies for Cultural and Creative Sector and Education. *Digital Presentation and Preservation of Cultural and Scientific Heritage*, *11*, 135–150. https://doi.org/10.55630/dipp.2021.11.12

Puebla, C., Fievet, T., Tsopanidi, M., & Clahsen, H. (2021). Mobile-assisted language learning in older adults: Chances and challenges. *ReCALL, 34(2), 169–184*. https://doi.org/10.1017/s0958344021000276

Rintaningrum, R. (2023). Technology integration in English language teaching and learning: Benefits and challenges. *Cogent Education*, *10*(1). https://doi.org/10.1080/2331186x.2022.2164690

Selfa-Sastre, M., Pifarré, M., Cujba, A., Cutillas, L., & Falguera, E. (2022). The Role of Digital Technologies to Promote Collaborative Creativity in Language Education. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.828981

Slamet, J. (2024). Potential of ChatGPT as a digital language learning assistant: EFL teachers' and students' perceptions. *Discover Artificial Intelligence*, *4*(1). https://doi.org/10.1007/s44163-024-00143-2

Torres Martín, C., Acal, C., El Homrani, M., & Mingorance Estrada, Á. (2021). Impact on the Virtual Learning Environment Due to COVID-19. *Sustainability*, *13*(2), 582. https://doi.org/10.3390/su13020582

Turchyn, I., Zaitseva, S., Rudenko, N., Saienko, V., Kuzemko, N., & Denefil, O. (2023). Using distance learning models as opportunities for blended learning for foreigners. *Revista Românească pentru Educație Multidimensională*, *15*(4), 178–191. https://doi.org/10.18662/rrem/15.4/787

Zou, B., Liviero, S., Hao, M., & Wei, C. (2020). Artificial Intelligence Technology for EAP Speaking Skills: Student Perceptions of Opportunities and Challenges. In *Technology and the Psychology of Second Language Learners and Users* (pp. 433–463). Springer International Publishing. https://doi.org/10.1007/978-3-030-34212-8_17